

APPENDIX.

By Major F. C. FRASER, I.M.S.

(Plate XI.)

Since I handed over a collection of Gomphines to Mr. Laidlaw in 1920 I have come into the possession of a further lot collected partly by myself and partly by friends who have kindly placed them at my disposal.

Some of these have already been described, viz. *Stylogomphus inglisi*, nearly related to *Heliogomphus*, *Onychogomphus* sp., and females of two distinct species of *Heterogomphus*, which will appear shortly in the *Memoirs of the Department of Agriculture in India, Entomological Series*. The remainder, some 110 species are now before me and provide new material and add new light to what has already been given above by Mr. Laidlaw. Dr. Annandale has kindly given me this opportunity of adding to the most important paper which has appeared on the Indian Gomphinae since Williamson's paper was published in 1907.

Some of the present genera will have to be further split up, I refer especially to the genus *Onychogomphus*, the larvae of two species of which, *O. biforceps* and *O. lineatus*, are contrasted below. The body of the former is broad and greatly depressed and its antennae broad, flat, triangular plates, the body of the latter is narrow and cylindrical, whilst its antennae conform to such as prevail amongst the majority of known Gomphine larvae (see text-fig., p. 426). With such wide variations in structure, it is impossible to believe that the two insects fall into the same genus.

With a long and wide experience of these insects in their natural habitat, I am able to say that few species occur commonly; a few such as *Cyclogomphus* and *Anormogomphus* are locally common, only two are widely spread, the remainder are come upon at odd intervals and in unexpected places and then only as solitary individuals.

With the exception of *O. lineatus* and *Ictinus rapax* they are single brooded, a few species emerge in swarms, generally after heavy rain and their appearance is of remarkably short duration, two to three weeks being the extent of their life on the wing.

The types of new species described below will eventually be deposited in the national collection in the British Museum, at present they remain in my own collection. I hope to place paratypes in the Indian Museum, at least as far as the Nilgiri species are concerned.

Heliogomphus nietneri Selys.

1 ♂ Kalar, 1000 ft., March 1916, coll. F. C. Fraser.

This specimen differs from the Ceylon form described by Hagen in the same particulars as the Assam species described by Laidlaw except that there are lateral markings as far as abdominal segment 6. The wings are saffronated at the base as far outwards as the node, this colour gradually diffusing outwardly. Stigma pale brown.

Caught in dry jungle a mile or so away from the nearest water.

Heliogomphus pruinans, sp. nov.

A single pair taken together, Burliyar, Nilgiris, 1500 ft., 29.vii.21.

Male. Hindwing 32 mm. Abdomen 42 mm.

Head black, the labrum with two basal greenish spots whose opposing borders are deeply concave; bases of mandibles greenish white; a greenish white band across the frons which is rounded and flattened; occiput depressed, black; eyes bottle green.

Prothorax black, the posterior lobe and an anterior band yellowish green, beneath pruinose white.

Thorax black on the dorsum marked by a complete, mesothoracic collar and narrow dorsal bands lying close to and parallel to the dorsal crest, both greenish yellow; laterally greenish yellow marked by two narrow black lines on the sutures, confluent above and below. Beneath and on lower part of sides pruinose white.

Legs black, the hind femora with a row of very closely set and very small spines.

Wings enfumed; stigma blackish brown, braced only in one wing; no basal antenodal of second series; only one cubital nervure to all wings; nodal index $\frac{11-15}{12-11} \bigg| \frac{15-12}{12-12}$; trigones of hindwing very elongate, the costal side twice as long as the basal; 3 rows of discoidal cells at level of node; all triangles entire; base of wings very oblique and closely resembling that of *Anisogomphus*; other points as for genus.

Abdomen black marked with pale greenish yellow as follows: a fine, middorsal line extending from segments 1 to 5, thickest at 2; a complete basal annule almost encompassing segment 7 and occupying about the basal third; a minute triangular basal point on the dorsum of 8, the remainder black. Laterally a spot on 1, the oreillet and an apical spot on 2, and small basal spots on 3 to 6.

Anal appendages as for genotype, the superior black at base, pale green to yellow at the apices, which are turned at first in, then up and finally out.

Female very similar to the male but much larger. The occiput simple, depressed, exactly similar to that of the male. Sides of thorax vivid greenish yellow, the pruinescence on the lower part of sides and beneath more marked than in the male.

Wings saffronated at the extreme base. The lateral spots on segments 1 to 3 forming a continuous unbroken line; on segments 4 and 5 the line is interrupted to form two elongate spots, whilst

on 6 the line is represented merely by a basal and a subbasal spot.

Legs black, hind femora with a row of long, robust, evenly spaced spines (The sexual differences here are very striking.) Vulvar scale as for *H. nietneri*, but the apex scarcely notched.

The insects are jungle-loving creatures, haunting the rocky beds of wild, mountain streams.

Microgomphus sp.

A single, somewhat teneral female from Rangoon, coll. 1909.

I am satisfied that this specimen is a true *Microgomphus* although it differs from the generic characters given above by Mr. Laidlaw in the two following particulars :—

- (i) The proximal angle of triangle in the forewing is not as far distant from the arc as the length of the proximal side of subtrigone.
- (ii) There are two rows of cells between Cu_{ii} and the hind margin of forewing.

I have however examined a number of both sexes of *M. torquatus* and find that neither of these two features are constant. As regards the number of rows of cells posterior to Cu_{ii} I find that there are invariably two rows in the female and one in the male. The distance of the proximal angle of the triangle in the forewing is very variable in both sexes, being sometimes more and sometimes less than the length of the proximal side of the subtrigone, so that other generic characters being present one may rightly assume that the specimen is a true *Microgomphus*.

Female. Abdomen 25 mm. Hindwing 22.5 mm.

Head black marked with citron yellow as follows: bases of mandibles, small basal spots joined by a basal streak on labrum, small lateral spots and a very fine streak on upper epistome, a line on the front of frons interrupted in the middle; occiput black with paired minute spines on either side of its middle.

Prothorax entirely black.

Thorax black on the dorsum marked by a narrowly interrupted, citron yellow, mesothoracic collar and an oblique dorsal stripe not joined to the collar; humeral stripe absent. Laterally bright citron yellow, the sutures finely outlined in black.

Legs black, the anterior femora yellow outwardly, the hind femora with about 9 robust spines on either side of the limb.

Wings hyaline, saffronated rather deeply at the base, venation as for genus subject to the exceptions already discussed; stigma

pale brown, feebly braced; nodal index $\frac{8-12}{8-9} \bigg| \frac{11-9}{9-8}$.

Abdomen black, marked with yellow as follows: segment 1 all yellow, 2 broadly on the sides, the dorsal carina finely, 3 with a basal dorsal spot and an elongate spot on the middle of dorsal carina, 4 similar but the spots much smaller, 5 to 7 with only the basal spots which are largest on 7; 8 to 10 all black.

Anal appendages yellow. Vulvar scale very small, cleft to its base.

This species is probably the smallest Gomphine known and is smaller than any individual *M. torquatus* which I have examined.

Perissogomphus stevensi Laid.

I have received several specimens of this species from Darjiling and Assam and from an examination of the venation, am able to add the following to the generic characters:—

- (i) Usually 1 but sometimes 2 rows of cells between M_1 and M_{1a} at the level of the distal end of stigma.
- (ii) Triangles of both fore and hindwings of female and also hindwings of male frequently traversed by a nervure.

Concerning the species, whilst the majority of those received have the ground colour yellowish brown, some specimens are a bright greenish yellow and I am satisfied that the former colour is the effect of decomposition and the latter the true colour during life.

Davidius sp.

A single female from Gopaldhara, Assam, coll. H. Stevens.

Abdomen 34 mm. Hindwing 32 mm.

Head glossy black, the bases of mandibles, 2 spots at the base of the labrum and a stripe across the frons citron yellow. Occiput greatly depressed at its centre.

Prothorax black with a small median spot on the posterior lobe, a geminate spot in front of it, the anterior border and a small spot on each side citron yellow.

Thorax black on the dorsum marked with a dorsal stripe parallel to the dorsal carina and connected with an interrupted mesothoracic collar; a triangular spot above and to the outer side of the dorsal stripe; a fine, humeral line separated from the spot, the long axis of the latter being at right angles to it. The sides citron yellow with narrow black stripes on the lateral sutures. Spots of yellow on tergum and at bases of wings.

Legs long and slim, black, the anterior femora yellow outwardly, the hind with a row of very long, robust, widely separated spines, 6 in number, mid femora with a row of closely set, short spines and a single long one at the distal end.

Abdomen black, marked with yellow as follows: a triangular, apical spot on segment 1, the base of the triangle at the apex of the segment, 2 with a bilobed spot on its middorsum, 3 to 7 and base of 8th with a fine, middorsal stripe, segments 1 to 3 broadly yellow at the sides.

Anal appendages small, conical, yellow.

Wings as for type, triangles of hindwings crossed, the left forewing has 2 basal antenodal nervures of the second series (a very rare occurrence), the other wings with one each.

Gomphus sp.

A single female, Gudalur, Nilgiri Wynaad, 3500 ft., 8.vii.21, coll. F. C. Fraser.

Female. Abdomen 34 mm. Hindwing 30 mm.

Head black, marked with citron yellow as follows: lateral lobes of labium, 2 large basal spots on labrum and the bases of mandibles. A minute spot in the centre of epistome and a large one on each side against the eyes; the frons, which is rounded, with a broad stripe on its upper surface; occiput simple, black, fringed thickly with very long black hairs; eyes bottle green.

Prothorax black with a large triangular citron yellow spot on either side.

Thorax black on dorsum with a complete, broadly joined, mesothoracic collar, prolonged slightly upward along the dorsal carina, an oblique, short, dorsal stripe well separated above and below from the alar sinus and the mesothoracic collar respectively. A humeral stripe represented by a small upper spot and a vestigial streak below. Laterally citron yellow, the sutures outlined in black. The thorax is coated with long, rather dense, black hairs.

Legs all black, hind femora with a row of 11 to 12 robust, evenly spaced, gradually lengthening spines on either side of the limb.

Wings slightly enfumed, saffronated at the extreme base as far out as the triangles which are all entire; stigma short, reddish brown, braced; no basal antenodal nervure of the 2nd series; 1 to 2 cubital nervures in forewing, only 1 in the hind; 2 rows of cells in the postanal area of forewing, 4 to 5 in the hind; 2 rows of cells between M_i and M_{ia} in all wings; nodal index $\frac{13-15}{13-10} \bigg| \frac{15-15}{11-12}$

(two of the postnodals of forewing are connected by a nervure and another is forked); 2 rows of cells as far as the level of node.

Abdomen black, marked with brilliant citron yellow as follows: the dorsum and sides of segment 1 broadly, 2 with a trilobed, dorsal stripe and the sides very broadly. 3 with the middorsal carina finely and two large lateral spots, 3 to 7 with basal annules notched by the black on the dorsum except on 7 where the apical border of the spot is straight, on 8 the basal spot a mere fine line, 9 and 10 with apical annules, broad on 9, narrow on 10.

Anal appendages black; segments 7 to 10 progressively shortening; vulvar scale very tiny, barely evident.

This handsome species will probably prove to be the type of a new genus but until the male is found will have to be confined to genus *Gomphus sens. str.* of which it at present forms the smallest species.

Gomphus nilgiricus Laid.

A single female, Coonoor, June 1917, coll. F. C. Fraser.

Abdomen 43 mm. Hindwing 40 mm.

This specimen was picked up dead, a small army of ants

was bearing it away and had somewhat damaged it. I have seen a second female near Gudalur (August 1921) which was ovipositing in wet sand in the half-dried bed of a mountain stream. The insect was quite fearless and flew backwards and forwards several times passing under my outspanned legs. Occasionally it hovered a few inches above the sand and made stabbing motions with the end of its abdomen in the wet sand. The function of its long ovipositor was thus explained. I had no net on this occasion and though I attempted to take it with a sweep of my hand it eluded me.

It differs in the few following respects from the above described male: the abdomen is of nearly even width throughout and perfectly cylindrical, the markings are a greenish yellow and on segments 3 to 5 are of the note-of-exclamation type, the dorsal stripe being swollen and rounded at the base of the segments, tapering pin-like to the apex; segments 6, 8 and 10 are unmarked and 9 has a large, dorsal, yellow mark extending from apex to base in a narrowing point.

Anal appendages small, conical, pointed, black.

Vulvar scale of remarkable length, very narrow and pointed and somewhat analogous to the structure as seen in *Cordulegaster*.

Gomphus o'doneli, sp. nov.

A single male from Hasimara Tea Estate, Duars, Bengal, coll. H. V. O'Donel.

Head very large; labium pale yellow, the middle lobe bordered with black, rest of head black save for two small basal spots on labrum and a narrow stripe across the crest of frons. Occiput curled up at its border and fringed thickly with stiff black hairs.

Prothorax black, the posterior lobe, a small spot on either side of it, a geminate spot in front of it and the anterior border yellow.

Thorax black, marked with yellow as follows: oblique dorsal stripes meeting a slightly interrupted mesothoracic collar, humeral stripe represented only by a small spot above. Laterally a broad, posthumeral stripe and the anterior three-fourths of the metepimeron. On the broad black between these two stripes there are three small yellow spots.

Legs short and robust, entirely black. The hind femora with the surface covered with small spines and a single larger one at the distal end.

Wings hyaline, stigma dark brown, braced, rather small; membrane very narrow, dark brown; 2 nervures between M_{iv} and M_{i-iii} in the forewing, only 1 in the hind; only 1 row of cells between M_i and M_{ia} at level of distal end of stigma; Cu_i and

Cu_{ii} nearly parallel to wing border; nodal index $\frac{9-16}{11-10} \bigg| \frac{14-9}{11-10}$; 3 rows of discoidal cells at level of node in the forewing; all triangles entire; 3 to 4 rows of post-anal cells in hindwing.

Abdomen tumid at base, 3 to 7 very narrow and cylindrical, the latter broadening at apex, 8 and 9 very broad, especially the former (but not winged), 10 rather small, segments progressively smaller from 7 to 10.

Abdomen black, marked with yellow as follows: a triangular dorsal spot and a large lateral spot on segment 1; a trilobed dorsal spot, the oreillet and a large apical lateral spot on 2; 3 with the dorsum narrowly at the base and a large lateral basal spot; 4 to 6 with dorsal basal spots meeting rather broadly over the carina; 7 with a broad basal annule prolonged apicalward along the dorsal carina; 8 with a small round spot on the dorsum at the base, the basal part narrowly expanded, also an L-shaped mark on the middle of the side, the "L" lying on its back; 9 with the whole of the lateral border yellow; 10 unmarked.

Anal appendages black, much the same as in the genotype, the superior, however, very broad, hollowed out below and correspondingly domed above.

Hamuli projecting as two long foliate structures directed forwards; lobe of penis of enormous size.

The robust short stature and the general facies of this species are quite unlike any other *Gomphus* I know of from India and recall the size and shape of *Ictinus*.

***Burmagomphus pyramidalis*, race.**

1 ♂ Hasimara Tea Estate, Duars, Bengal, coll. H. V. O'Donel.

Differs from type by the occiput being all black, by the yellow on the labrum being cut up into two spots by the median prolongation of the basal black meeting the bordering black, and lastly by the inferior anal appendages being strongly recurved upwards at their apices almost like a fish-hook.

The size is also much larger: abdomen 36 mm., hindwing 26.5 mm. Wings rather deeply enfumed.

***Burmagomphus duarensis*, sp. nov.**

A single male from Hasimara Tea Estate, coll. H. V. O'Donel, Sept. 21.

Male. Abdomen 34 mm. Hindwing 26 mm.

Head entirely black save for bases of mandibles and a broad, bright yellow line on the upper surface of frons; occiput straight, simple, fringed with a few black hairs.

Prothorax black with a large citron yellow spot on either side.

Thorax black on dorsum with dorsal oblique stripe united to a narrowly interrupted mesothoracic collar; humeral stripe represented only by a small upper spot. Sides citron yellow, the sutures finely outlined in black.

Wings hyaline, saffronated at extreme base; stigma light brown, braced, one or two rows of cells between M_i and M_{ia} ; a basal antenodal nervure of 2nd series in both the forewings; nodal

$$\text{index: } \frac{11-15}{11-10} \bigg| \frac{16-11}{10-11}.$$

Legs entirely black except the anterior pair of femora which are pale whitish green outwardly; hind femora with a row of long robust spines to the number of 6 on the distal half.

Abdomen tumid at base, very narrow and cylindrical from 3 to 6, remaining segments dilated, especially apex of 7 and whole of 8. Black, marked with citron yellow as follows: 1st segment entirely yellow save for two black dorsal spots; 2 with a trilobed dorsal spot the oreillets and an apical spot; 3 to 4 with the dorsal carina finely yellow and a lateral stripe, broadest at the base and not extending quite as far as apex; 5 to 7 with the lateral basal spot meeting over the dorsum and on 7 occupying the basal half of the segment; remaining segments black.

Anal appendages as for type, the superior pale yellow, inferior black.

Indogomphus, gen. nov.

Wings with a basal antenodal nervure of 2nd series to all wings, all triangles entire, the triangles of hindwings elongate, sectors of arc approximating immediately after the arc, 3 transverse nervures between M_{i-iii} and M_{iv} in forewing, only one in the hind, Cu_i and Cu_{ii} a little divergent in the hindwing, 4 rows of cells posterior to Cu_{ii} in the hind wing, forking of M_{i-ii} and M_{iii} symmetrical, discoidal field divergent, 3 to 4 rows of cells at level of node, 3 rows of cells between M_i and M_{ia} at distal end of stigma, only 1 row of cells (occasionally 2) at base of forewing, base of wing rather oblique as in *Anisogomphus* and angle not prominent.

Anal appendages of male very similar to those of *Heliogomphus*. Vulvar scale broadly triangular, almost equilateral, the apex with a small rounded notch.

Indogomphus longistigma, sp. nov.

A single pair from the Nilgiri Wynaad, 3000 ft., 14.viii.21, coll. F. C. Fraser.

Male. Abdomen 44 mm. Hindwing 35 mm. Hindwing 37 mm. in the female.

Head entirely black save for a broad greenish yellow line on the frons overlapping the front and a broad line on the occiput of the same colour. The frons finely black at the base and the occiput black at either end and fringed with remarkably long black hairs. Eyes bottle green.

Prothorax black, the posterior lobe and a small oval spot adjoining it anteriorly and a band on its anterior border pale yellow.

Thorax black, marked with bright yellow as follows: a complete mesothoracic collar which sends a prolongation up along the middorsal carina as far as the alar sinus; a narrow dorsal stripe close alongside the middorsal carina reaching the alar sinus above

but not meeting the mesothoracic collar; a vestigial antehumeral stripe represented by a subquadrate spot above and a mere trace of a line some distance below it, barely visible to the naked eye; a broad humeral stripe and a very narrow mid-lateral, both disconnected from two larger spots below themselves; finally, the posterior two-thirds of the metepimeron. Beneath black, marked by a fine, V-shaped, yellow spot.

Legs slim, black and very long, the hind femora extending to the apical end of the 2nd segment and furnished with four pairs of very long equidistant black spines. The anterior femora are greenish yellow on the flexor surface.

Wings hyaline, long and narrow; stigma pale brownish yellow, that of the hind much larger than that of forewing, 3.5 mm. to 5 mm. in the hind; nodal index $\frac{11-16}{12-11} \bigg| \frac{15-12}{10-12}$; membrane absent.

Abdomen a little tumid at the base, segments 3 to 6 slim and cylindrical, the apical part of 7 and segment 8 dilated and with rudimentary lateral leaves, 8 and 9 almost the same length, 10 half the length of 9. Black, marked with yellow as follows: segment 1 with a large quadrate spot on the side and a broad stripe on the dorsum; segment 2 with an L-shaped spot on the side, the under-side of the very robust oreillets and a small stripe on the upper surface of the same structure and a triobed dorsal band; 3 with a lateral basal triangular spot followed by a small oval stripe about the middle of the segment and its dorsum, widely at the basal third but less so afterwards and not extending to the apex of segment; 4 to 6 with the same markings but the lateral stripe absent and a wide gap between the basal, dorsal yellow and that following it (this dorsal yellow is peppered with minute, black spines); segment 7 with nearly its basal half yellow broadly and its middle third narrowly; 8 to 10 with merely the dorsal carina moderately, finely yellow.

Anal superior appendages pale yellow, lyrate, broad at base, tapering to a fine point, a little upturned, at first divergent but then curling in so as to meet at the tips and enclose a circular opening. The outer side with a broad blunt spine. Inferior appendage with widely divergent branches, projecting from below the superior so as to be seen from above, black. (It will be seen from this description that the appendages are very similar to those of *Heliogomphus* to which the genus is closely allied.)

Female very similar to the male, differing as follows: bases of mandibles yellow (occiput similar to the male, simple but with only fine, sparse, short hairs); abdomen with 9th segment about the same length as 8, which is a little dilated, and tapering rapidly to 10, which is very small and narrow (the tapering end of abdomen suggestive of that of *Macrogomphus*).

Anal appendages small, conical, palest yellow, as is also a small, cone-like protuberance between them.

Hind femora with 5 to 6 pairs of long black spines similar to

but more numerous than in the male. Between them are numerous smaller, evenly sized spines.

Wings a little enfumed, stigma light brown, the difference in size even more marked than in the male; nodal index $\frac{12-17}{11-10} \bigg| \frac{17-12}{11-11}$, otherwise similar to the male.

Onychogomphus bistrigatus Selys.

A single male from Kalar, Nilgiris, 1000 ft., v 1917, coll. F. C. Fraser.

The specimen agrees so minutely with the Selysian description of the type female that there can be no doubt that the insects are conspecific.

Abdomen 38 mm. Hindwing 29 mm.

Abdominal segments 8 and 9 are black with a small basal lateral yellow spot, whilst 10 is all black.

The anal appendages are yellow, the superior tipped with black, the inferior black externally, yellow internally. The superior has a small spine inwardly at the junction of the last two-thirds, the inferior has only a basal tooth at its basal third, otherwise as for *O. uncatatus* Selys.

Onychogomphus bifaceps Selys.

A single female from Palghat, Malabar Dist., coll. T. N. Hearsey, 16.vi.21.

Female. Abdomen 42 mm. Hindwing 35 mm.

The insect is somewhat stouter and larger than the female of *O. biforceps nilgiriensis* and the markings differ considerably; the 7th and 8th abdominal segments are also more dilated.

Differs in markings as follows: spots on labrum large, in fact it would be more correct to say that this structure is yellow, narrowly bordered with black, the narrow belt of black at base connected narrowly in the middle line with the anterior bordering black; base of mandibles, lower part of epistome and a spot on either side of upper yellow; band on frons complete; occiput yellow at its centre and raised into a single point in the middle (humeral stripe absent, antehumeral oblique, not connected with the mesothoracic collar which is slightly interrupted). Laterally the broad median black stripe is traversed by a narrow irregular yellow stripe.

Legs. Femora yellow mottled with black, the hind femora with a row of closely set, very short, very robust spines, 9 to 10 in number.

Abdominal markings similar but the basal spot on segment 8 very large.

Anal appendage entirely yellow, as is also the apex of the intermediate conical process.

Vulvar scale light reddish brown, very short and broad, deeply notched in the middle, reset in a hollow of the 9th segment.

Wings similar but only a single row of cells between M_i and M_{ia} ; nodal index $\frac{10-16}{9-11} \bigg| \frac{17-10}{11-11}$ and 3 rows of cells in discoidal field at level of node.

***Onychogomphus biforceps nilgiriensis*, subsp. nov.**

3 ♂ and 1 ♀ Gudalur, Nilgiris, 16.x.21, coll. F. C. Fraser. (One male, the type, coll. by T. Bainbrigge Fletcher on the same date.)

Male. Abdomen 35.4 mm. Hindwing 30 mm.

Differs from *O. biforceps* Selys as follows :—

Yellow spot on occiput absent; mesothoracic collar interrupted; humeral stripes entirely absent; a small yellow spot just below wings on the upper part of the broad lateral black stripe; oval dorsal spots on abdominal segments 4 to 6 absent; a minute apical spot in addition to small lateral basal spot on segment 8; superior appendages yellow only on outer side, black inwardly; legs entirely black.

The female of *O. biforceps* Selys has not been described, but is probably somewhat like that of the present species which is as follows :—

Abdomen 36 mm. Hindwing 33 mm.

Colouring similar to the male with the following exceptions: spots on labrum very small; band on frons interrupted by the black in the floor of the suture so as to form two oval spots; occiput with two robust spines situated close together at its middle; antehumeral band not connected with the mesothoracic collar; yellow spots on sides of segment 2 and the oreillets confluent; basal spots on dorsum of 3 to 7 interrupted by the black of dorsal crest; basal spot on 8 very minute and the apical one absent.

Anal appendages rather longer than segment 10, tapering, black with a bright yellow tip, a long triangular protuberance between them; 7 to 10 progressively shortening.

Vulvar scale half the length of segment 9, bifid to its base so as to form two small triangular leaves.

Wings enfumed and distinctly saffronated at the base; nodal index: $\frac{12-14}{11-10} \bigg| \frac{15-11}{10-13}$.

Jungle-loving insects, hiding up in shady mountain streams.

Description of larva of *O. biforceps nilgiriensis*.

Total length 23 mm. Length of hind femora 6 mm. Greatest breadth of body at abdomen 9 mm.

Head moderately broad and quadrate, a postocular spine on either side; antennae remarkably specialized, basal segments small, cylindrical, 3rd segment broad, flattened and triangular, sloping downward and forward, 4th segment present only as a rudimentary tiny spine at inner lateral angle of 3rd segment.

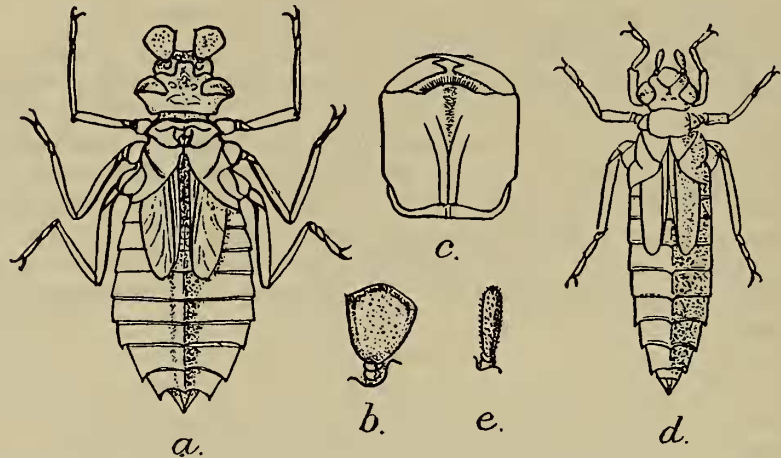
Prothorax small, a double tubercle on its dorsum.

Wing sheaths broad, extending to middle of segment 6 or thereabouts.

Abdomen greatly depressed, segments 7 to 10 with stout apical lateral spines, 4 to 8 with well marked dorsal ridge, raised up as robust spines on each segment.

Mask very short, extending to base of first pair of legs only, middle lobe rounded and fringed with rather long stiff brissae. Mentum angulated, the whole lobe nearly quadrate.

Easily distinguished from the larvae of any other species of Gomphine by the shape of its antennae. Four specimens were



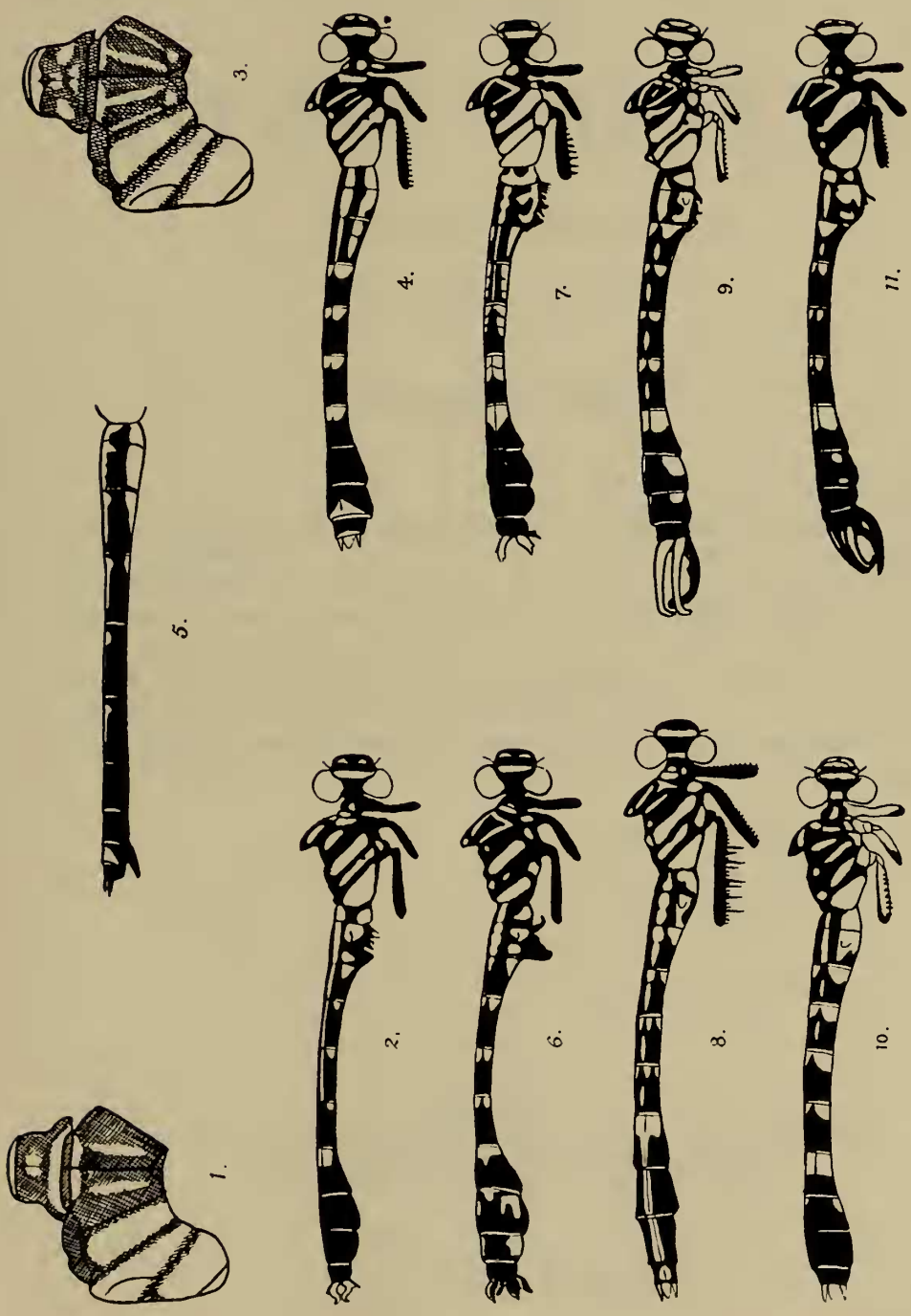
a. Larva of *Onychogomphus biforceps nilgiriensis*. b. Antennae of same.
c. Mask of same.
d. Larva of *Onychogomphus lineatus*. e. Antennae of same.

found in the pool of a mountain stream, amongst debris consisting mainly of rotting leaves, twigs, etc., above Gudalur, 26.ii.22.

Five adults insects were taken within 10 yards of this pool and 3 others seen. No other species have been seen or taken over this stream and no other kinds of larvae found, so that there is no doubt as to the species to which they belong. If the breeding out of these larvae prove the correctness of the diagnosis, I propose to remove the group *biforceps* from *Onychogomphus* and erect a new genus for it with the name of *Lamelligomphus*. The head of the larva reminds one irresistibly of that of a cockchafer (*Melolonthidae*).

DESCRIPTION OF PLATE XI.

- FIG. 1.—Thoracic markings of *Heliogomphus nietneri* Selys.
,, 2.—Markings of *Heliogomphus pruinans*. Male.
,, 3.—Thoracic markings of *Davidius* sp. Female.
,, 4.—Markings of *Gomphus* sp. Female.
,, 5.—Abdominal markings of *Gomphus nilgiricus* Laid. Female.
,, 6.—Markings of *Gomphus o'doneli*. Male.
,, 7.—Markings of *Burmagomphus duarensis*. Male.
,, 8.—Semi-lateral view of *Indogomphus longistigma*. Female.
,, 9.—Markings of *Onychogomphus bistrigatus* Selys. Male.
,, 10.—Markings of *Onychogomphus biforceps* Selys. Female.
,, 11.—Markings of *Onychogomphus biforceps nilgiriensis*. Male.



Indian Dragonflies of the subfamily Gomphinae.